RELIABLITY GROUP
MANUAL NO 143

7593
D-C VOLT BOX
MAXIMUM RANGE 1500 VOLTS

LEEDS NORTHRUP
PHILADELPHIA 44, PA.

7593

D-C VOLT BOX

MAXIMUM RANGE 1500 VOLTS

1. GENERAL INFORMATION

The purpose of this instrument is to extend the range of a potentiometer, such as the L&N® 7553 Potentiometer which has a maximum range of 1.5 volts, to a maximum range of 1500 volts. Each range position has a maximum output of 150 millivolts to the potentiometer.

Although there is no definite guarding of the terminals, the two GRD terminals make contact with the metal top plate of the instrument through metal washers.

The volt box is rated at 750 ohms per volt (0.0014 ampere) and is accurate within ±0.02% at 25 C ambient temperature.

An OPEN position is provided on the selector switch to permit de-energizing the volt box without removing the LINE connections.

2. PRINCIPLE OF OPERATION

The volt box operates on the principle that the electromotive force across the potentiometer is a definite fractional part of the voltage being measured. Thus, the potentiometer measures this emf and the product of the potentiometer reading and the volt box multiplier is the actual value of emf being measured.

3. WIRING CONNECTIONS

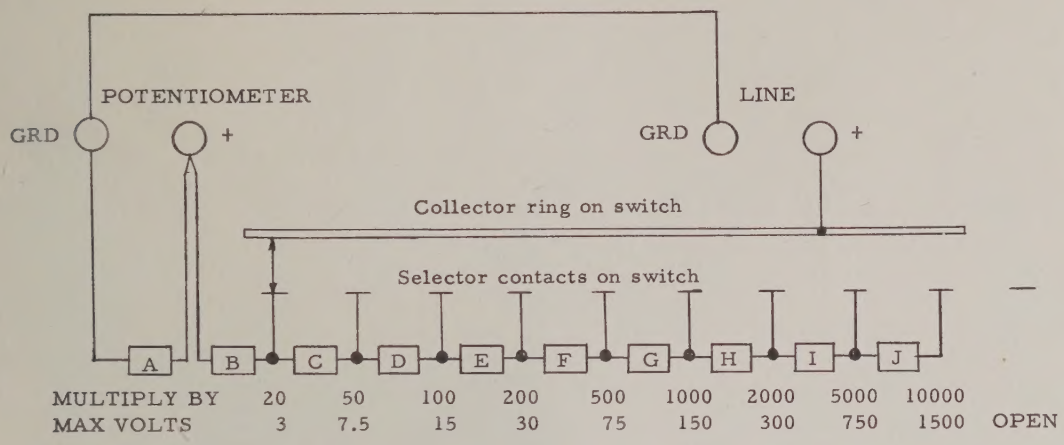
CAUTION: DO NOT APPLY A HIGHER VOLTAGE THAN THAT INDICATED ON THE SELECTOR DIAL (at the MAX VOLTS position).

Connect the ground side of the emf to be measured to the LINE terminal marked GRD and the high side of this emf to the LINE terminal marked +. For safety, only line voltages with one side grounded should be measured.

Connect the POTENTIOMETER terminal marked GRD on the volt box to the corresponding emf terminal on the measuring potentiometer and connect the POTENTIOMETER terminal marked + on the volt box to the corresponding emf terminal on the measuring potentiometer.

4. OPERATION

Set the range selector switch dial of the volt box so that the value indicated at the MAX VOLTS position is the one nearest to but higher than



RESISTORS
(Nominal Values)

Symbol	Ohms	Symbol	Ohms	Symbol	Ohms	Symbol	Ohms
A	112.50	D	5625	G	56250	J	562500
B	2137.5	E	11250	H	112500		
C	3375	F	33750	I	337500		

Fig. 1 - Schematic wiring diagram and resistors for 7593 Volt Box.

the value of emf to be measured. Voltages applied, which are higher than the MAX VOLTS setting of the range selector dial may damage the volt box.

Balance the measuring potentiometer for a reading and multiply this reading by the value at the MULTIPLY BY position of the range selector dial of the volt box. The result is the value of emf being measured.

5. MAINTENANCE

A. To Remove Instrument Panel

Turn each mounting screw (one in each corner of the panel) two complete turns counterclockwise to release the clamping nut from the ledge inside the case. Lift the panel from the case. The mounting screws remain in place in the panel.

B. To Replace Instrument Panel

Turn the clamping nut, on each mounting screw, so that it will clear the ledge inside the case when the panel is fitted into place on the case. After the panel is positioned on the case, turn each mounting screw counterclockwise until a click is heard and then turn each screw clockwise until it is tight.

C. To Clean Terminals

The instrument terminals should not require special cleaning under the normal use encountered in a laboratory. However, if the terminals become contaminated, clean them with a clean solution of detergent and water, such as a 5% solution of Atlantic Refining Company Ultra Wash or Xtra Wash and water. The terminals may also be cleaned with chemically pure carbon tetrachloride. If it is necessary to hasten the drying of the terminals, dry them by using isopropyl alcohol.

6. REPLACEMENT PARTS LIST

Description	L&N Part No.
Dust Cover	095045
Binding Post Head	Std. 19-A
Panel Mounting Screw Assembly	---
Screw	4-4-1-24
Upper Spring	28-1-3-10
Lower Spring	28-1-3-9
Clamp Nut	72-4-1-1
Retaining Ring	27-3-3-12
Case	039448
Knob and Dial Assembly	---
Knob	002007
Cover	067298
Dial	110056

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